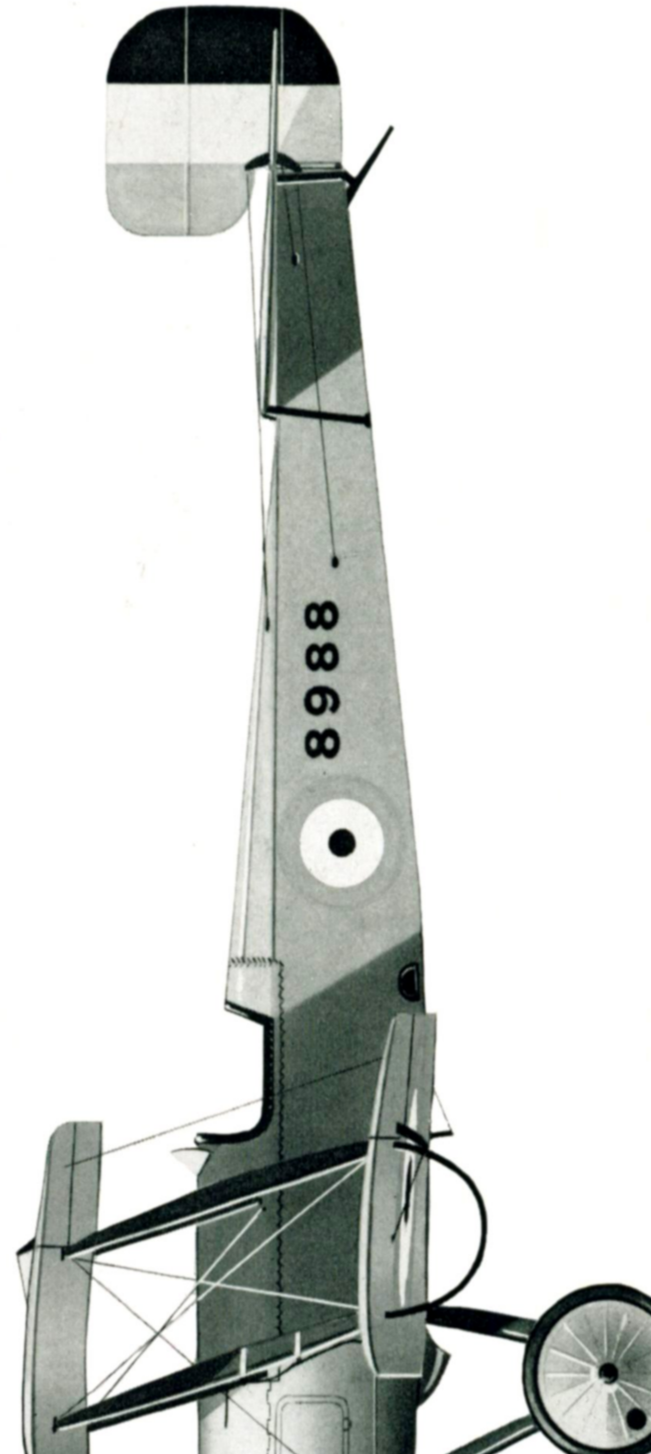
PROFILE
PUBLICATIONS

The Bristol Scouts C & D



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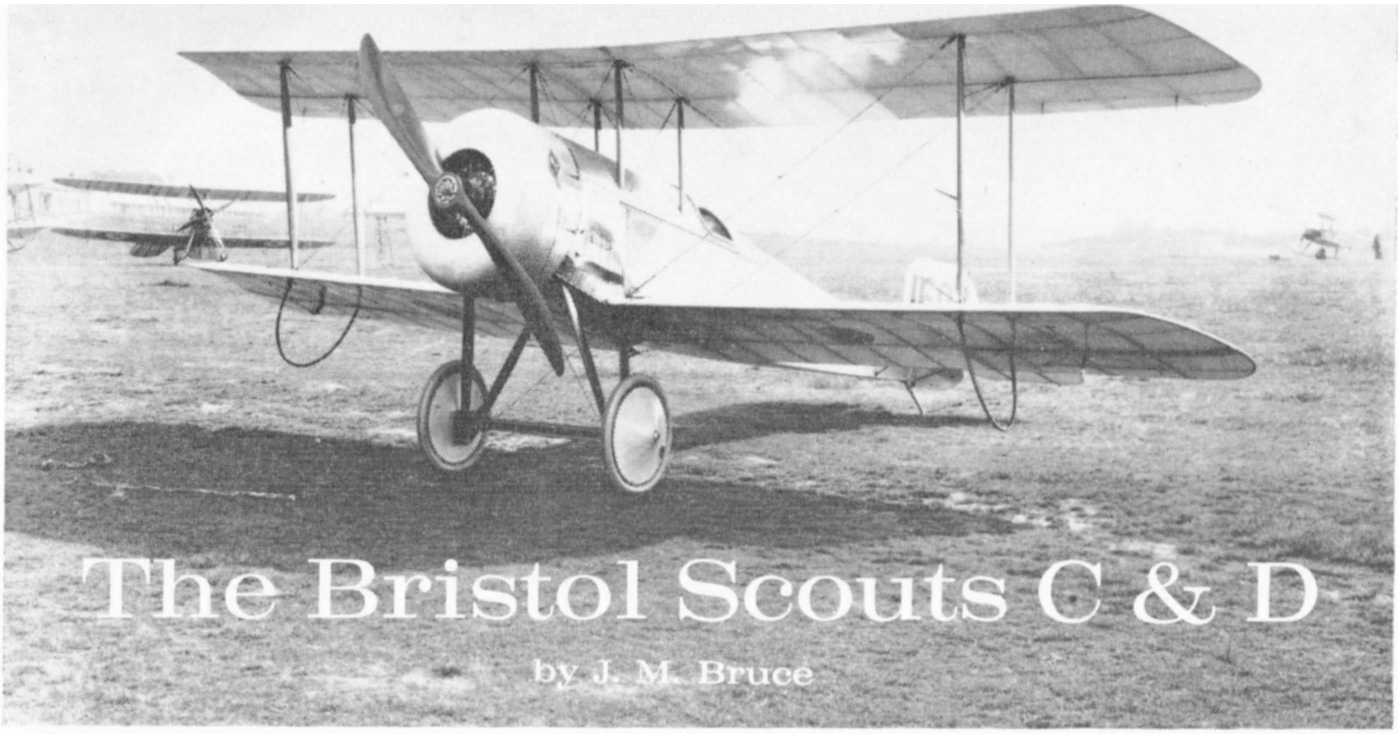


The Bristol Scouts C & D

by J. M. Bruce

Production Scout C for the R.F.C., No. 1607, photographed at Farnborough on 10th May 1915. (Photo: Crown copyright)

In the years immediately preceding the outbreak of war the British and Colonial Aeroplane Co. Ltd. was one of the most forward-looking and highly organized firms in the British aircraft industry. In 1912 it had virtually no fewer than three design offices: C. E. Gordon England, working on biplane designs; Henri Coanda, engaged on the development of the Bristol-Prier monoplanes; and the mysterious X Department. This last office was a secret department responsible for work on the hydrofoil aircraft designed by Lt. C. D. Burney, R.N. Its first two members were Frank S. Barnwell and Clifford W. Tinson.

Coanda designed a single-seat monoplane for the Italian government in 1913; this design was given the designation S.B.5 and the Bristol works sequence No. (S.N.) 183. The S.B.5 was never completed. Its fuselage was in existence by November 1913, but it seems that no further work was done on it. Possibly because the Sopwith Tabloid had made a considerable impact on the aviation world late in 1913 there was considerable interest in the possibilities of fast biplanes for high-speed reconnaissance duties.

By that time Coanda was regarded as the Bristol company's chief designer. Perhaps because he was a Roumanian and the Admiralty attached importance to the experiments with the Burney hydrofoil monoplanes, Coanda had no authority over X Department. One can now only conjecture as to the reasons why Barnwell was asked, late in 1913, to design a high-speed single-seat scout biplane, and why his design was initially drawn up under the sequence number 183 of the abandoned S.B.5.

The aircraft that emerged had no connection whatever with the S.B.5. It was entirely Frank Barnwell's creation and on its completion was given a new works sequence number, 206. The necessary drawings were done in an ordinary manifold book, carbon copies being sent to the workshops where the components were made. The new Bristol "Baby Biplane", soon to be called Scout, was a tiny single-bay aircraft with equal-span wings. Simplicity was the keynote of its design and, for its time, it was a remarkably clean aeroplane. Span was a mere 22 ft.; there were ailerons on upper and lower wings, which were fairly heavily staggered. The 80 h.p. Gnome engine, which had been reconditioned after its immersion in an earlier Coanda-designed seaplane (Bristol sequence No. 120) that had crashed on 15th April 1913, was partly enclosed in a flat-fronted cowling, open at the bottom, and the clean lines of the slim fuselage were accentuated by the use of aluminium side panelling right back to the cockpit, which was behind the rear centre-section struts.

A simple V-type undercarriage of perilously narrow track was fitted. The tail unit, of steel tubing, consisted of a strut-braced tailplane, divided elevator, and a small balanced rudder.

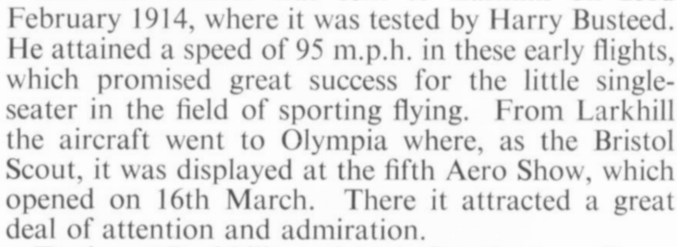
The new Bristol was sent to Larkhill on 23rd February 1914, where it was tested by Harry Busteed. He attained a speed of 95 m.p.h. in these early flights, which promised great success for the little single-seater in the field of sporting flying. From Larkhill the aircraft went to Olympia where, as the Bristol Scout, it was displayed at the fifth Aero Show, which opened on 16th March. There it attracted a great deal of attention and admiration.

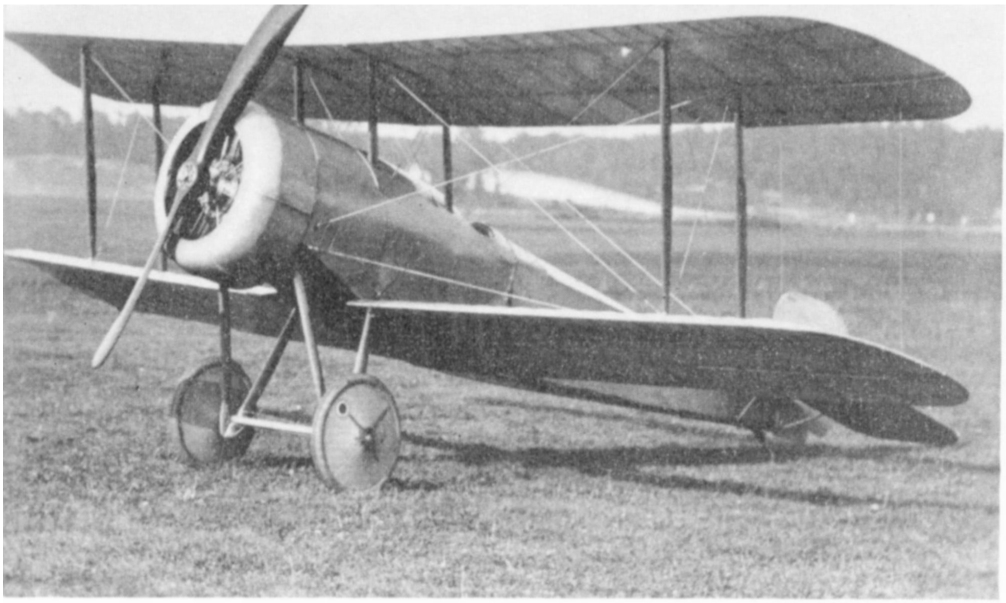
Testing at Larkhill continued after the Aero Show, and in April the Scout was returned to Filton for modification. New wings of greater span and chord were fitted, and the dihedral angle was increased. The ailerons were shortened, the rudder enlarged, and an open-front full-circular engine cowling was fitted.

These modifications greatly enhanced the Scout's appearance. When tested at Farnborough on 14th May 1914 its speed was recorded at 97·5 m.p.h.

The Scout was entered for the 1914 Aerial Derby

The prototype Bristol Scout in its original form, photographed with its pilot, Harry Busteed, at Larkhill in February 1914.
(Photo: Bristol Aeroplane Co.)





The modified Scout with new wings of greater span and chord and open-front engine cowling.

and was to be flown by Sidney Sippé. The contest would have provided an interesting comparison between the British racing single-seaters of the time, for the field included the Avro 511 and two Sopwith Tabloids. Postponed from 23rd May until 6th June, the race was still dogged by unfavourable weather: visibility was so poor that the British and Colonial company would not allow the Scout to participate.

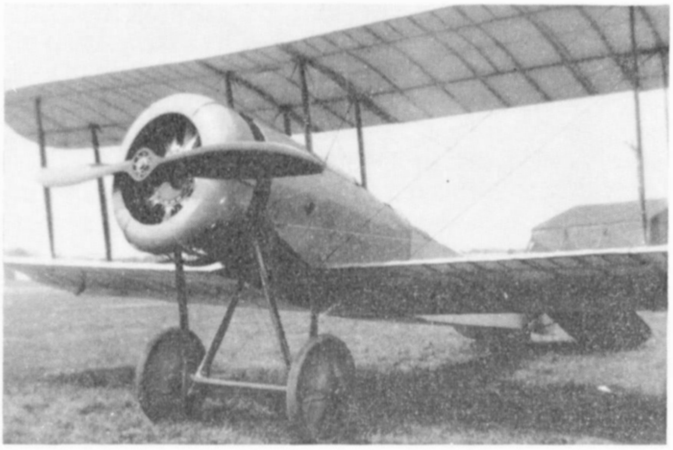
Among the Aerial Derby competitors was Lord Carbery, who was so captivated by the Bristol Scout, which he was allowed to fly on 8th June, that he wanted to buy it. As two more Scouts were then under construction at Filton the sale was agreed, and Lord Carbery bought the engineless airframe for £400. He installed an 80 h.p. Le Rhône engine from his Morane-Saulnier monoplane.

At about this time Barnwell had made preliminary drawings of a Scout development fitted with the Statax "wobble-plate" engine. This was a remarkably compact swashplate engine of which three versions were designed: 40 h.p. (five-cylinder), 80 h.p. (seven-cylinder) and 100 h.p. (ten-cylinder). Of these it seems that only a 40 h.p. engine was ever installed in an aircraft, a Caudron G II that was entered for the 1914 Aerial Derby but was apparently withdrawn before the postponed race took place. No more was heard of the Statax engine.

Lord Carbery flew his Scout in the Hendon-Manchester-Hendon race of 20th June 1914 but damaged the aircraft at Castle Bromwich in a cross-wind landing. It was airworthy again, with undercarriage track increased, by 7th July, in time to participate in the so-called London-Paris-London race of 11th July. Despite a temperamental engine and a heavy load of fuel Lord Carbery got away from Hendon and reached Buc in 3 hours 56 minutes flying time. Unfortunately, by an oversight at Buc, only one of his tanks was refilled; on the return journey he ran out of fuel over the Channel and had to ditch.

He came down beside a tramp steamer and was saved, but the over-energetic efforts of the ship's crew broke his aircraft and only the engine was salved: the remains of the first Bristol Scout probably still lie on the bed of the Channel. Three weeks later Europe was at war.

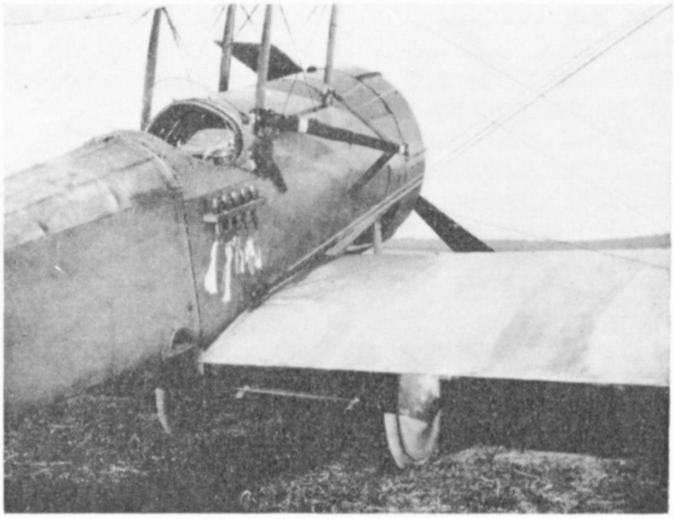
When completed, the two new Scouts (Bristol S.N.s 229 and 230) were delivered to the Royal Flying Corps at Farnborough on 21st and 23rd August 1914. They were given the official serial numbers *633* and *648*. These aircraft had improved interplane bracing, all flying wires being duplicated, and the undercarriage had the wider track introduced on Lord

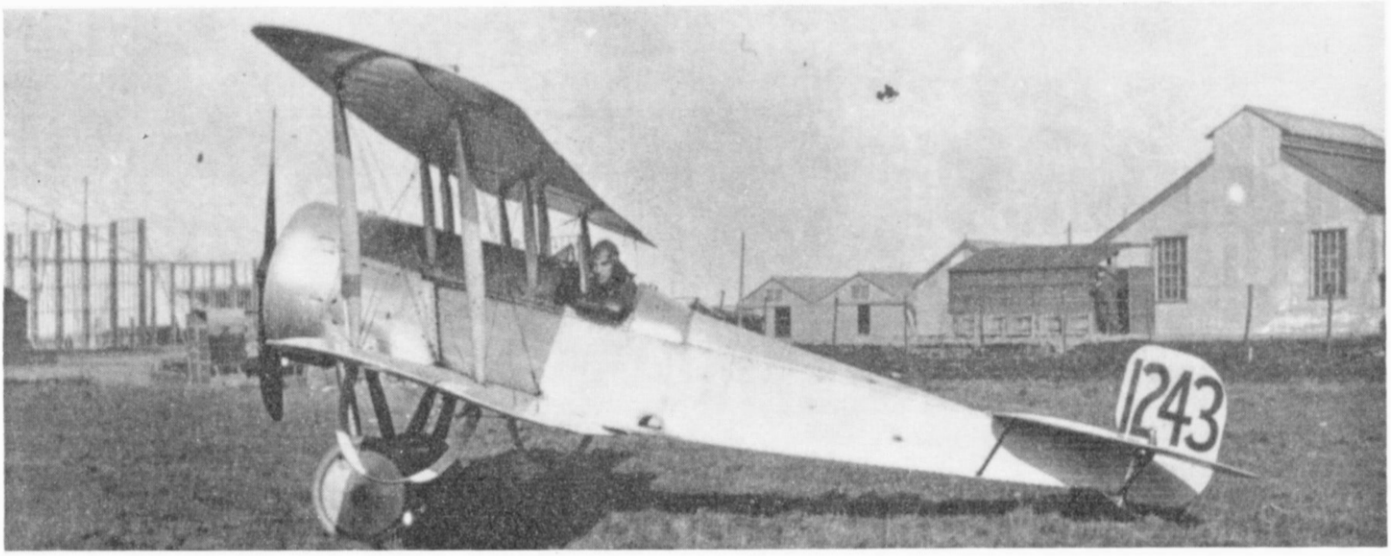


The first Scout after it had been bought by Lord Carbery and fitted with an 80 h.p. Le Rhône engine. With this engine the lower portion of the cowling was extensively cut away.

One of the two Scouts B at Farnborough, August 1914.
(Photo: Imperial War Museum, MH 3243)

Scout B of No. 5 Squadron, R.F.C., in the field, showing its armament of one Lee-Enfield rifle with stock removed, one Mauser pistol in a holster immediately under the breech of the rifle, and five rifle grenades. The rags tied to the grenades were intended to act as stabilizers when falling.
(Photo: Flight International)





The first production Scout C, No. 1243, *at the Isle of Grain. In the cockpit is Flight Sub-Lt. W. G. Moore. The fairings on the wing-tip skids are an unusual refinement.*

Carbery's repaired Scout. A new and rather bulbous cowling was fitted to the 80 h.p. Gnome engine; it had external stiffening ribs and an unusual re-entrant frontal aperture. Semi-circular skids were fitted under the lower wings directly under the interplane struts.

These two Scouts must have been the prettiest aircraft of that time, and the exquisite workmanship of the Bristol craftsmen is apparent in the photographs that were taken at Farnborough. They were sent to France in September 1914. One went to No. 3 Squadron, R.F.C., the other to No. 5 Squadron.

The Scouts were instantly popular with the pilots and might have done great things if they had had effective armament. No. 3 Squadron fitted two rifles to their Bristol, one on each side of the fuselage firing outwards to clear the airscrew. Perhaps No. 5 Squadron might claim to have started the "Christmas-tree" technique in aircraft weaponry, for their Scout had one Lee-Enfield rifle on the starboard side, a Mauser pistol in an external holster immediately behind the rifle, and five rifle grenades in an external rack. The Bristols were usually flown by Lt. R. Cholmondeley of No. 3 Squadron and Major J. F. A. Higgins of No. 5; but that great character 2nd Lt. Gordon Bell had earlier flown one of them during the retreat from Mons and drew this tribute from the late Wing Commander L. A. Strange:*

> "Gordon Bell, on his Bristol Scout, was another pilot who distinguished himself during the retreat. Like Spratt, he flew a machine that was very light about the undercarriage, and I always admired the way these two pilots landed and took off from small fields without damaging their machines."

The fate of No. *633* is not known, but No. *648* gave long service in the field. It was transferred to No. 4 Squadron, and was probably the Scout that was recorded on that unit's strength on 9th May 1915; it was still with that squadron on 31st August 1915. By 25th September, however, No. 4 no longer had a Bristol on its strength.

But by that date there were nine Bristol Scouts with the squadrons in France: Nos. 2, 3, 5, 6, 7, 10 and 16 each had one; No. 8 had two. The War Office

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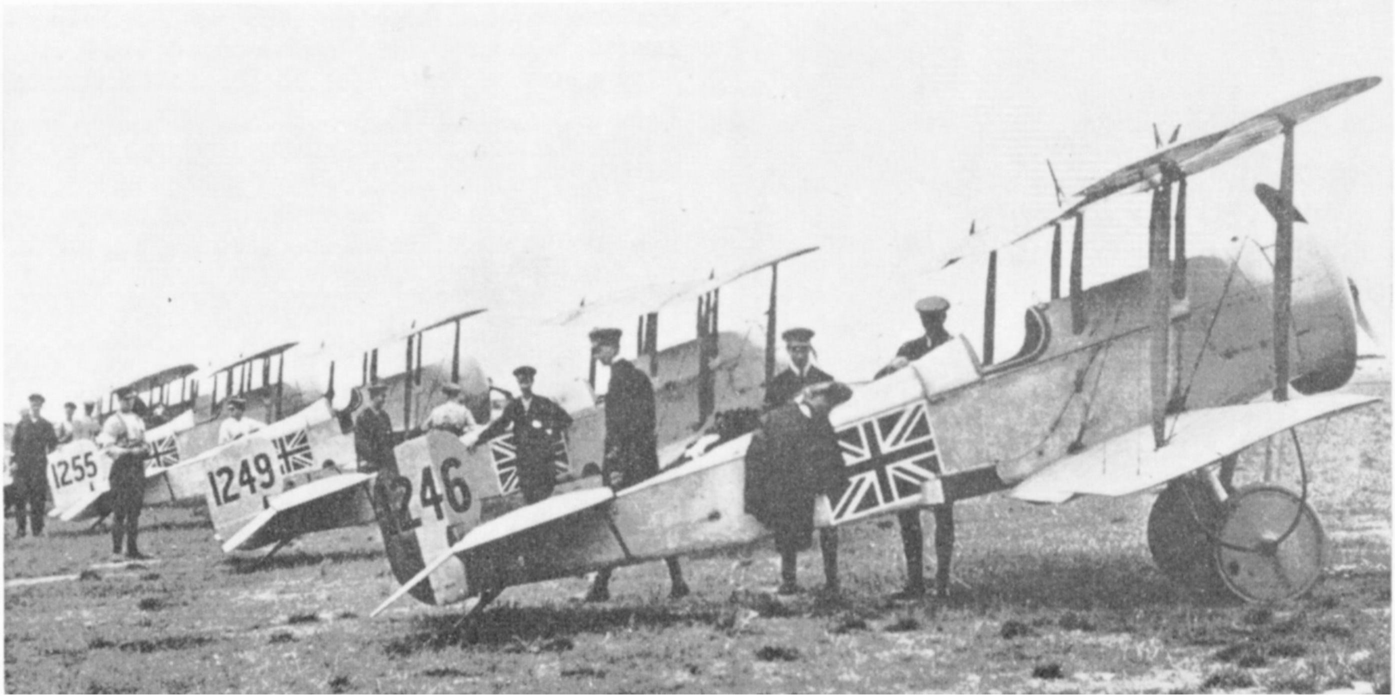
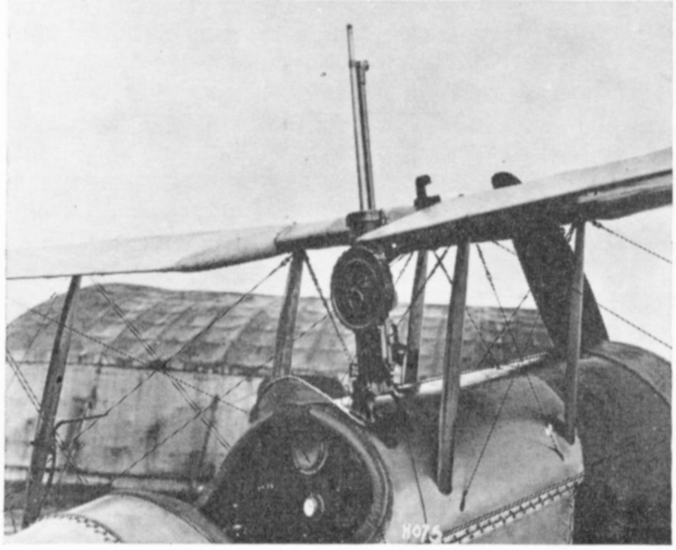
* *Recollections of an Airman*, page 49.

This well-known photograph of a line-up of R.N.A.S. Scouts C at Eastchurch is full of interest. The nearest aircraft, No. 1246, *is the only one to have red, white and blue stripes on the rudder. It is fitted with Ranken Dart containers, of which the starboard one can be seen at the lower right-hand corner of the Union flag on the fuselage side; the release lever is fitted directly under the rear centre-section strut. Third aircraft in line is No.* 1255, *which made the first operational flight from the deck of a carrier vessel at sea on 3rd November 1915.* (Photo: Imperial War Museum, Q58422)



had ordered twelve Bristol Scouts (*1602–1613*) on 5th November 1914; the Admiralty followed suit on 7th November with a contract (C.P. 67209/14/X) for 24, to be numbered *1243–1266*. An inter-Service dispute over priority then arose. This was resolved by the seemingly peculiar compromise of numbering the first production Scout *1243* (it was S.N. 450) and delivering it to the R.N.A.S. on 16th February 1915. It went to the R.N.A.S. station at Port Victoria. The R.N.A.S. then had to wait over three months for their next Scout, for the following twelve aircraft (S.N.s 451–462) were delivered to the R.F.C. as *1602–1613* between 23rd April and 13th June 1915. No. *1602* was recorded as being at Farnborough on 1st May and went to No. 1 Squadron, R.F.C., in France; *1603* was similarly reported on 5th May and was sent to No. 5 Squadron.

The balance of the first Admiralty contract, *1244–1266*, were delivered as S.N.s 463–479 and 486–491 between 3rd June and 24th August. Meanwhile the War Office had ordered 75 more Scouts (*4662–4699* and *5291–5327*) under Contract No. A3242 dated 16th March, 1915.



Overwing mounting of Lewis gun on R.F.C. Scout C. The gun was held in the level and vertical positions by spring clips, and the firing control was somewhat primitive. An unusual gun sight is fitted. (Photos: Crown copyright)

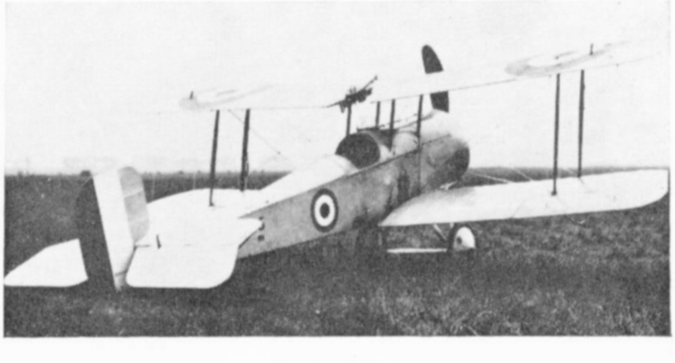
These production Scouts were designated Bristol Scout C and were built at the Bristol company's Brislington works. The designation was arrived at by regarding Lord Carbery's aircraft as the Scout A and its two successors as Scouts B. In both the R.F.C. and R.N.A.S. the Bristol Scout was popularly known as the Bristol Bullet.

The Scout C did not differ materially from the Scout B. An improved engine cowling was fitted and the top decking ahead of the cockpit was deepened to afford more protection to the pilot. Behind the engine cowling the aluminium side covering was shortened considerably and ended at the forward centre-section struts. The top decking about the cockpit was of plywood, and all other covering was of fabric. The basic airframe was an entirely conventional wooden structure, cross-braced in the usual manner.

The standard engine was the 80 h.p. Gnome rotary and was fitted to *1243–1266*, *1602–1613* and *4662–4671* when they left the factory. By the late summer of 1915, when deliveries of *4668* onwards were being made, the supply of Gnome engines was in jeopardy, partly because British production of the engine had not got into its stride (by the end of June 1915 only 108 British-made Gnomes had been completed), and partly because France threatened to stop deliveries of engines because deliveries to France of the promised 15 per cent. of the total British output of Lewis guns had not been maintained. It seems possible that a few more Gnomes may have been obtained before the Bristols were handed over to the R.F.C., for *4684–4687* and *4689* were at Farnborough between 27th October and 5th November 1915, all fitted with Gnome engines.*

When Gnomes were not available the alternative power unit was the 80 h.p. Le Rhône, deliveries of which began in June 1915. But even the Le Rhône was scarce: only 53 had been delivered from France by the end of September 1915. The Admiralty regarded the Gnome as more reliable than the Le Rhône and therefore demanded that R.N.A.S. Bristols must have Gnome engines in view of their liability to have to fly over water. A further fifty Scouts C (*3013-3062*) had been ordered for the R.N.A.S. under Contract No. C.P. 74782/15/X dated 6th June 1915, but the Admiralty's insistence on Gnomes so delayed deliveries that the last aircraft was not delivered until 25th March 1916. (But at least one Scout of this batch, *3035*, was fitted experimentally with an 80 h.p. Clerget engine.) The R.F.C. fared somewhat better, for all the Scouts ordered

Scout D of R.N.A.S. with overwing Lewis gun, long ailerons and large rudder.



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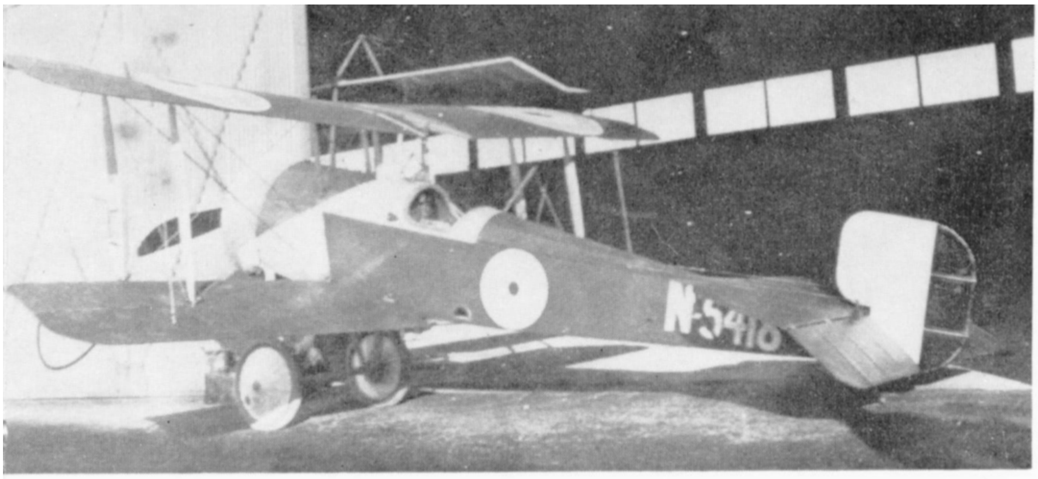
* *The Gnomes were, respectively, Nos. 23730/W.D.3187, 23726/W.D.3192, 23732/W.D.3193, 23729/W.D.3198 and 23717/W.D.3189.*



Last but one Scout D, N5418. *This aircraft had the final short ailerons and the medium-size rudder that went with them; the wing-tip skids were in the outboard position and the engine was an 80 h.p. Gnome.*
(Photo: Cpl. McCaffrey, R.C.A.F.)

under Contract A3242 had been delivered by 18th February 1916.

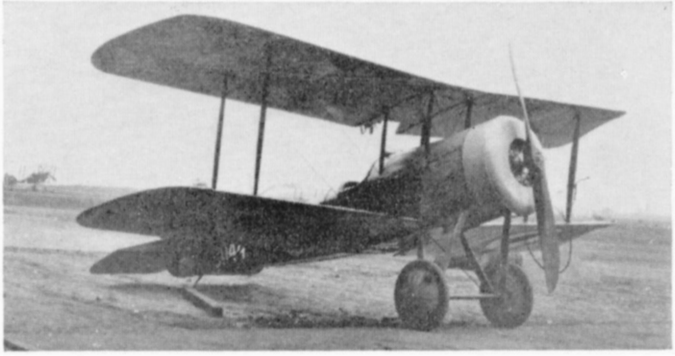
The only major modification made during the production of the Scout C was the introduction of an enlarged horizontal tail of increased span and area. This was fitted to the R.N.A.S. Scouts C of the batch *3013–3062* and appears to have been standardized for all subsequent aircraft. All Scouts built after 10th September 1915 had their dihedral increased to 3 deg., and it was found that a revised oil system had to be provided. The oil tank was behind the cockpit on the early Scouts; this tended to starve the engine of oil when the aircraft was taxiing, the defect being more pronounced on aircraft that had the Le Rhône engine. At about the same time as the enlarged tailplane and elevators were introduced the design of the lower wing roots was modified to provide a gap about four inches wide between the spars, and the trailing-edge portion was cut away to the same width.

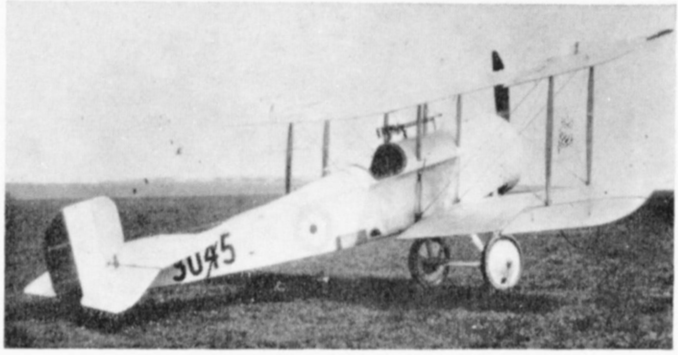
No squadron of either service was completely equipped with the Bristol Scout: indeed, few units had more than a handful. The Bristol undoubtedly suffered from having been a pre-war design and from the early practice of giving only one or two single-seat scouts to each unit in the days before squadrons were given specialized functions. Equally, its potential as a single-seat fighter was never realized because it was not provided with effective armament at the time when it could have been used most advantageously.

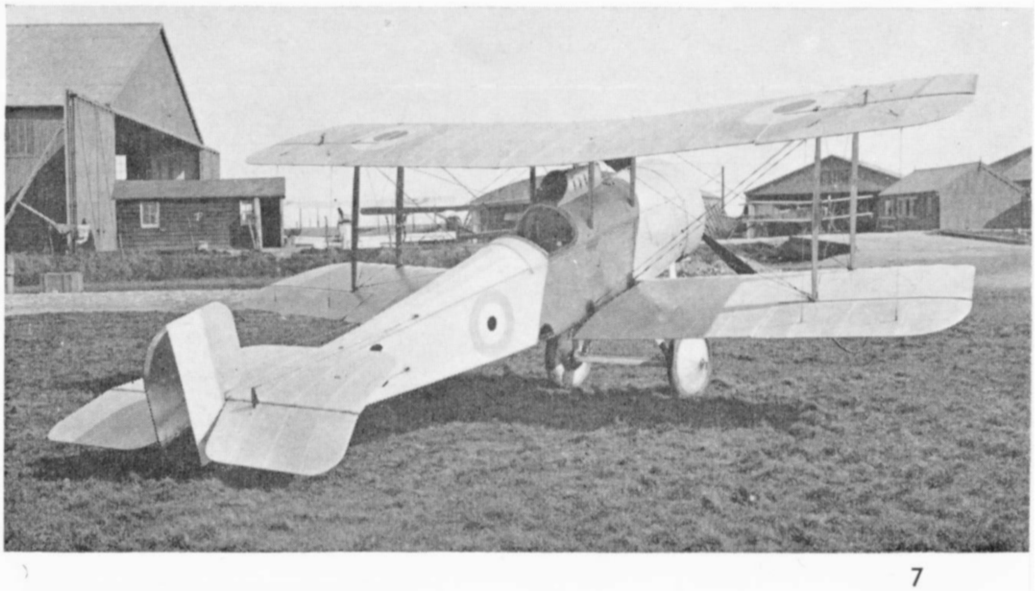
Guns of assorted types were, of course, carried or fitted in various ways by individual pilots and squadrons, but lack of an interrupter gear was a serious impediment. Some of the assorted weapons carried on or in R.N.A.S. Scouts are described by Major W. G. Moore in his book *Early Bird* (pp. 14–15):

> "My first armament in the Bristol Bullet was three Webley Fosbery revolvers in a rack with lanyards attached to stop them blowing out of your hand when you were shooting down the enemy !
>
> Webley Fosberys were chosen as they were semi-automatic, that is, they would keep on firing if you pressed the trigger but they did not eject the shellcase. It was thought if an ejecting automatic pistol was used when flying a pusher type of machine (that is with the propeller behind the pilot), the shellcase might damage the wooden propeller and bring you down.
>
> Next, we had double-barrel Holland and Holland Aero 12-bore guns. The Aero guns had both barrels choked, i.e., bore reduced towards the end

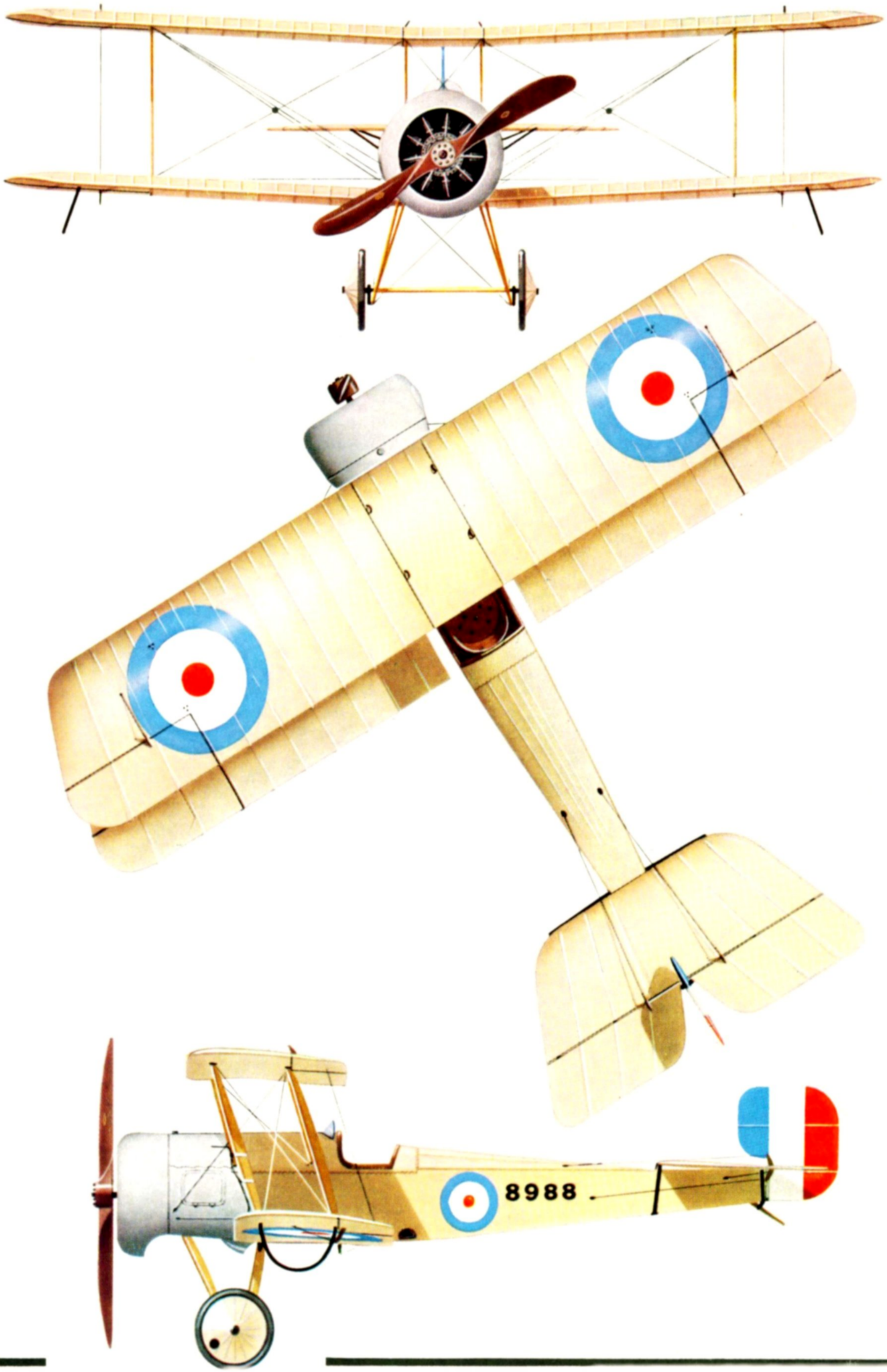
(*continued on page 10*)

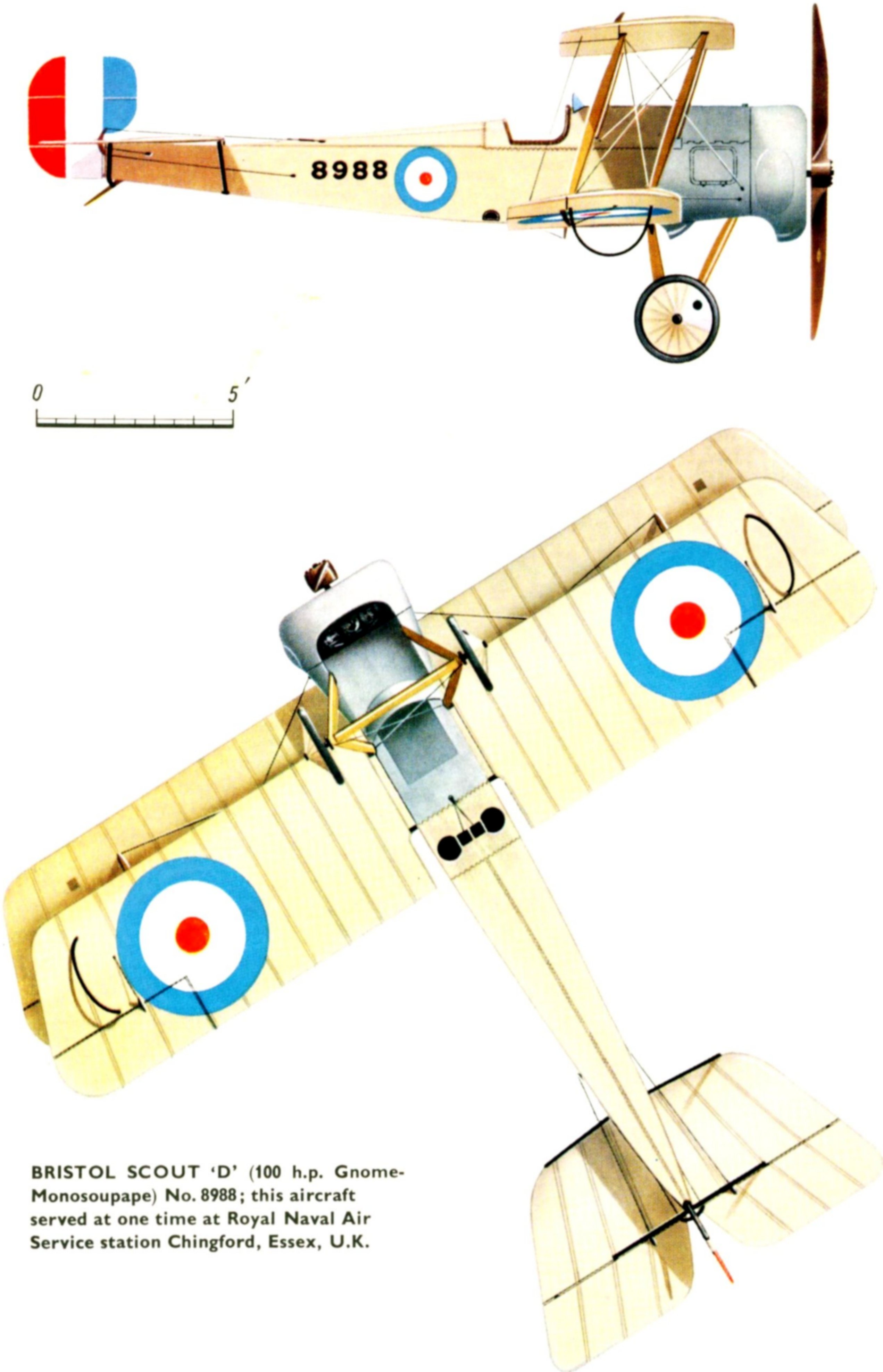






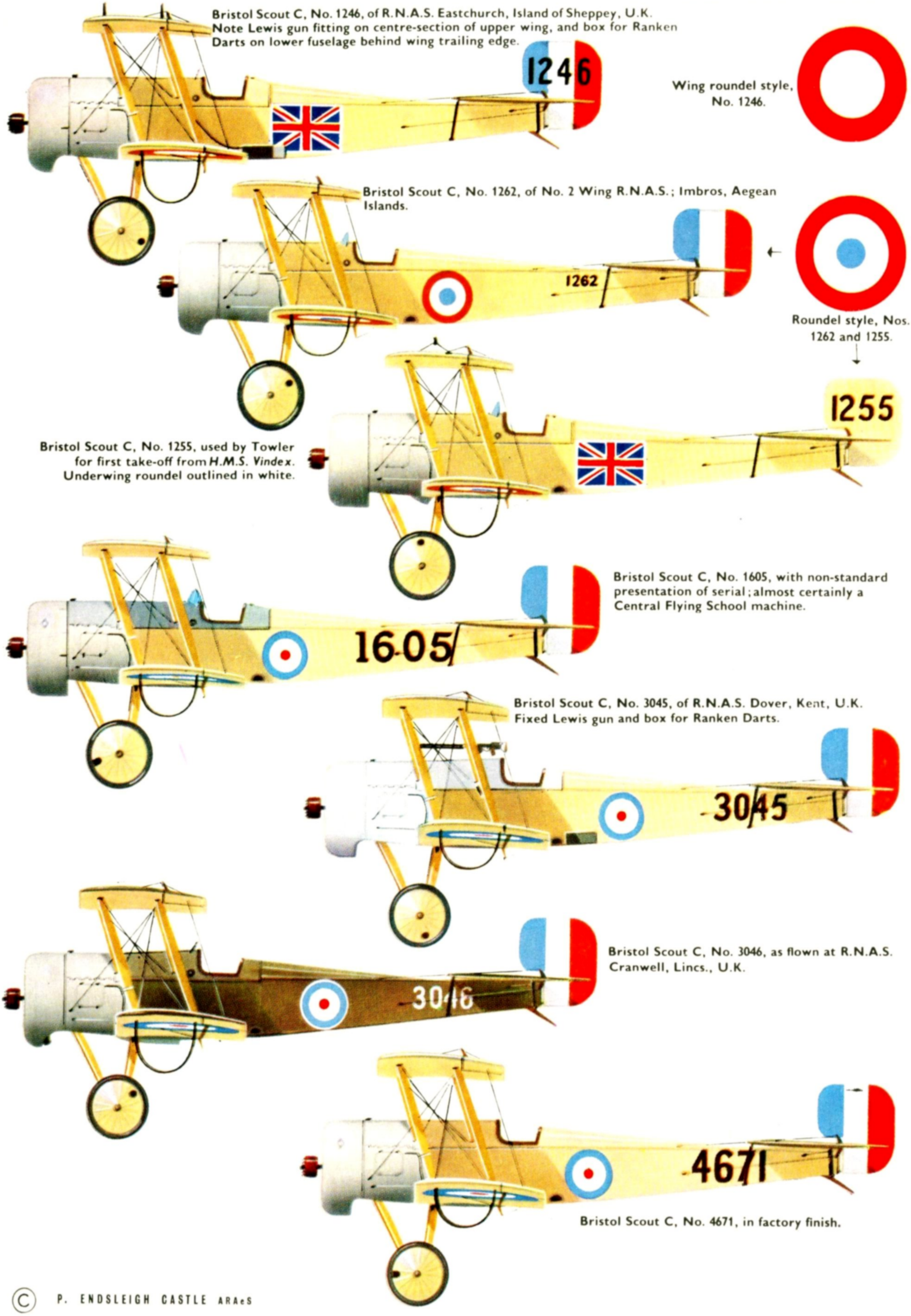
Three consecutively numbered R.N.A.S. Scouts C display different armament installations. No. 3044 *has an overwing Lewis gun and a cut-out in the trailing edge of its centre section. No.* 3045 *of R.N.A.S. Dover has its Lewis gun mounted centrally on top of the fuselage and without an interrupter gear, plus containers for Ranken Darts on the lower longerons. No.* 3046 *had a similar installation but the gun was housed within a fairing. This last Scout C is here seen at an early stage of its existence at the Isle of Grain. Later, with gun removed and doped khaki, as illustrated in colour on page 8, No.* 3046 *was used at Cranwell.*


8988



BRISTOL SCOUT 'D' (100 h.p. Gnome-Monosoupape) No. 8988; this aircraft served at one time at Royal Naval Air Service station Chingford, Essex, U.K.

© P. ENDSLEIGH CASTLE ARAeS



Bristol Scout C, No. 1246, of R.N.A.S. Eastchurch, Island of Sheppey, U.K. Note Lewis gun fitting on centre-section of upper wing, and box for Ranken Darts on lower fuselage behind wing trailing edge.

Wing roundel style, No. 1246.

Bristol Scout C, No. 1262, of No. 2 Wing R.N.A.S.; Imbros, Aegean Islands.

Roundel style, Nos. 1262 and 1255.

Bristol Scout C, No. 1255, used by Towler for first take-off from *H.M.S. Vindex*. Underwing roundel outlined in white.

Bristol Scout C, No. 1605, with non-standard presentation of serial; almost certainly a Central Flying School machine.

Bristol Scout C, No. 3045, of R.N.A.S. Dover, Kent, U.K. Fixed Lewis gun and box for Ranken Darts.

Bristol Scout C, No. 3046, as flown at R.N.A.S. Cranwell, Lincs., U.K.

Bristol Scout C, No. 4671, in factory finish.

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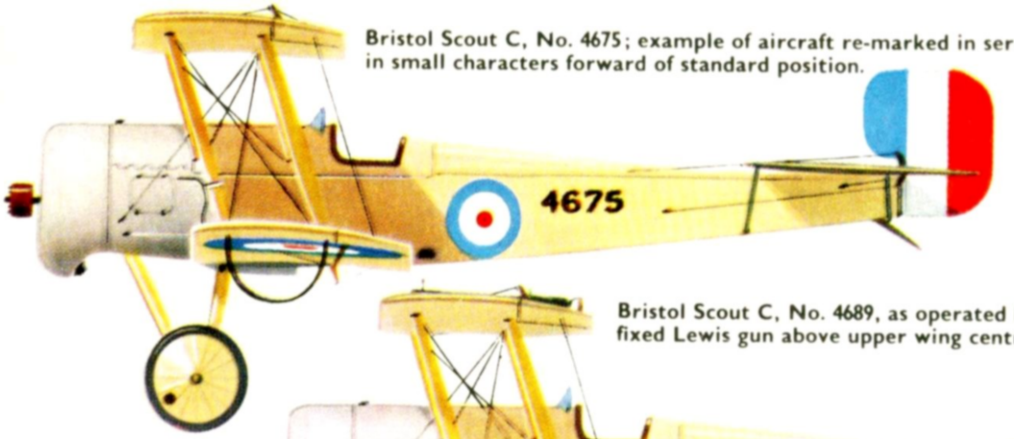
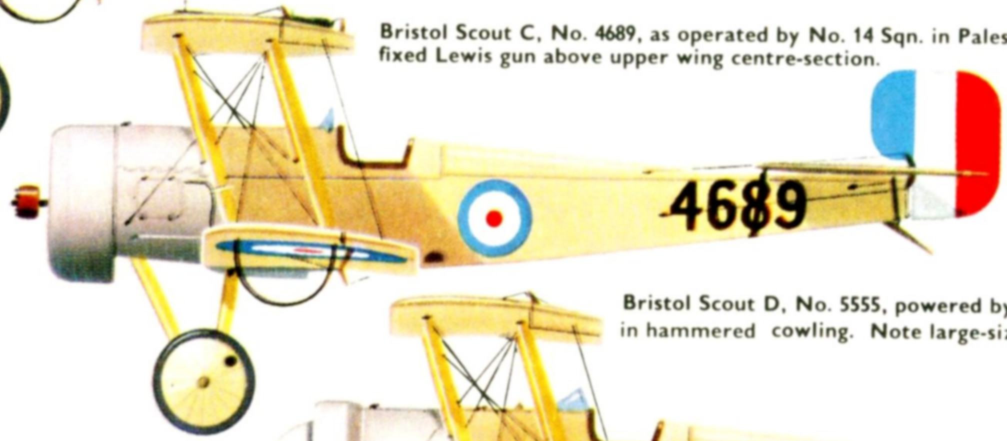
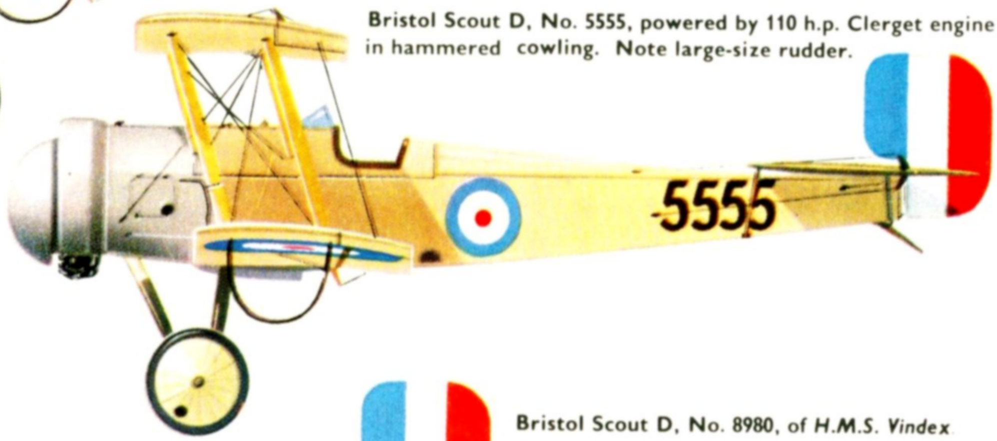


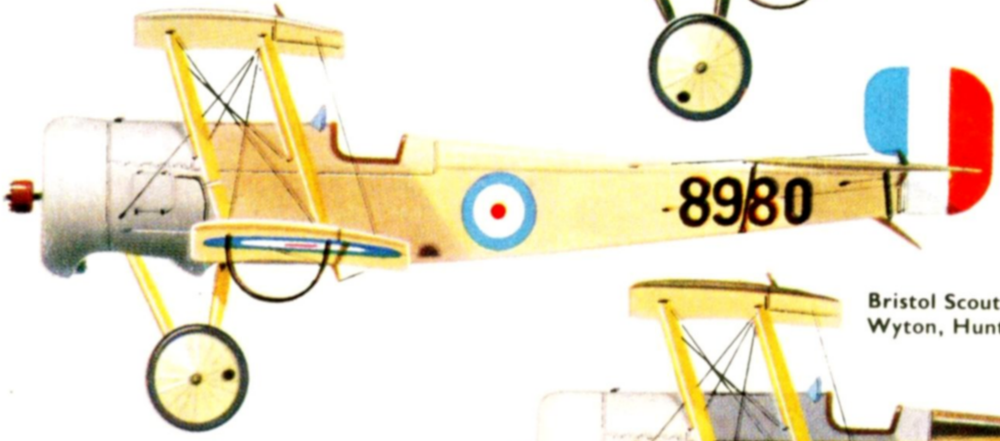
Bristol Scout C, No. 4675; example of aircraft re-marked in service, serial in small characters forward of standard position.



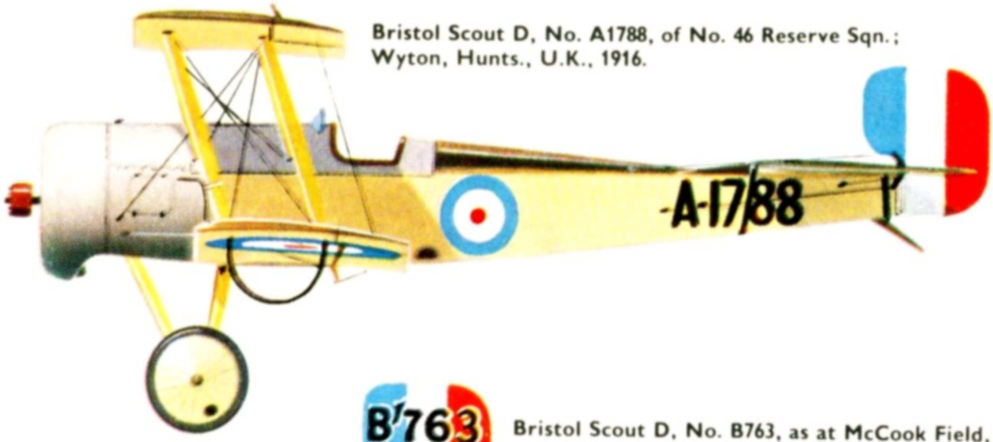
Bristol Scout C, No. 4689, as operated by No. 14 Sqn. in Palestine. Note fixed Lewis gun above upper wing centre-section.



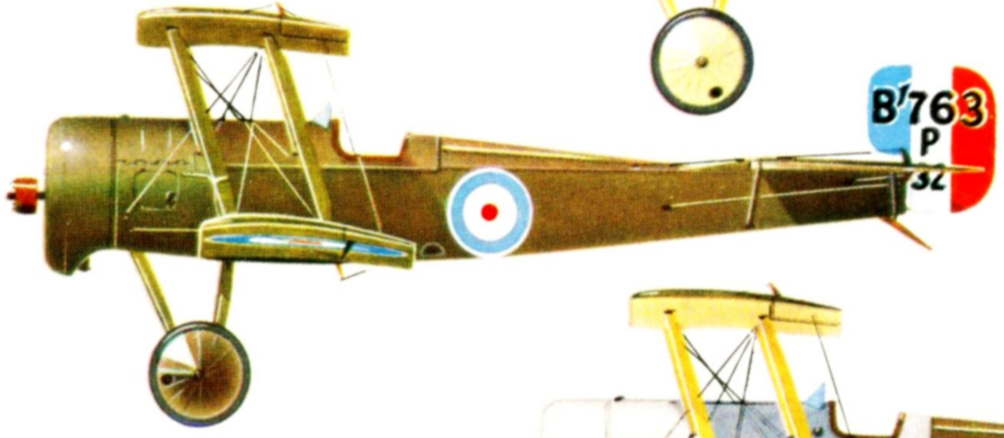
Bristol Scout D, No. 5555, powered by 110 h.p. Clerget engine in hammered cowling. Note large-size rudder.



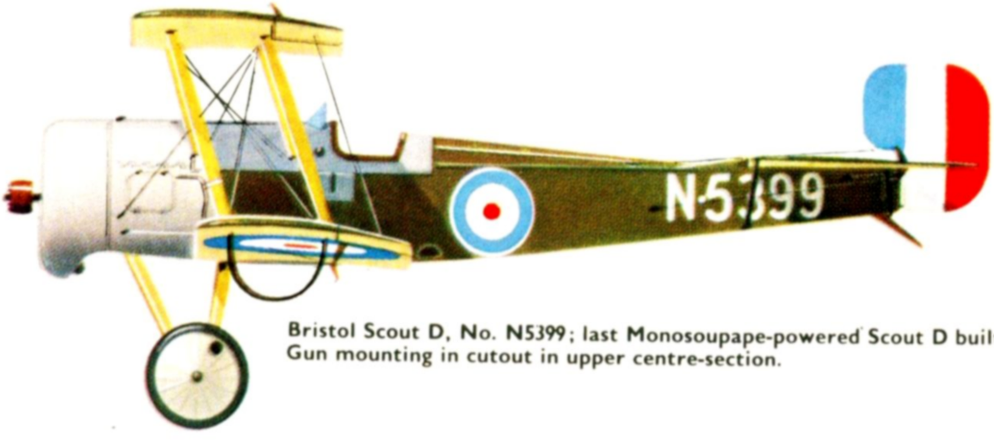
Bristol Scout D, No. 8980, of *H.M.S. Vindex*.



Bristol Scout D, No. A1788, of No. 46 Reserve Sqn.; Wyton, Hunts., U.K., 1916.



Bristol Scout D, No. B763, as at McCook Field, U.S.A. Note absence of underwing skids, project number under serial on rudder.



Bristol Scout D, No. N5399; last Monosoupape-powered Scout D built. Gun mounting in cutout in upper centre-section.

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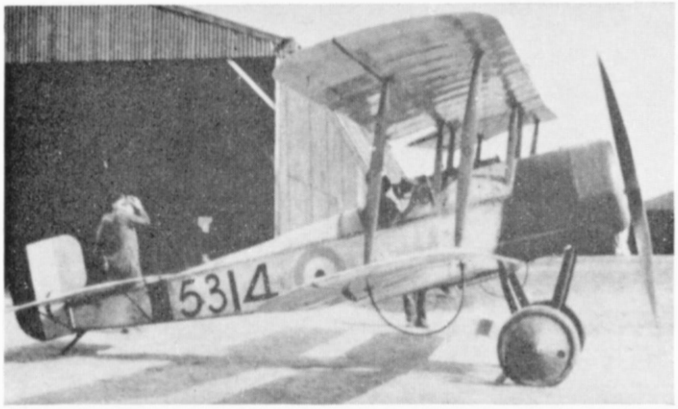
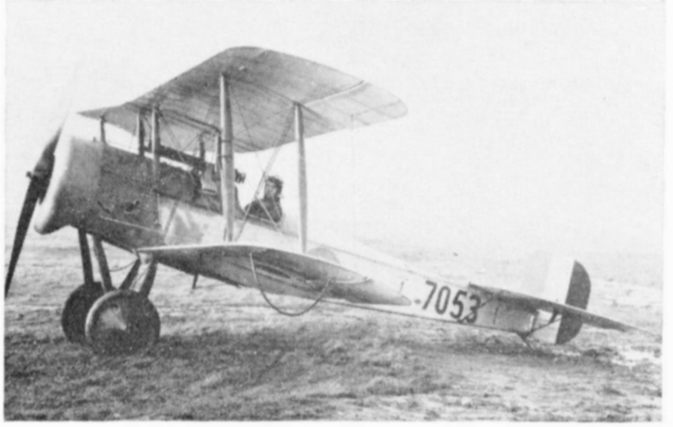


Scout C 5314 *fitted with a Vickers gun and Vickers-Challenger interrupter gear. It is believed that this photograph was made in France in 1916.* (Photo: E. F. Cheesman)



Scout D with synchronized Vickers gun. The installation of the armament differs slightly from that on No. 5314. *The aircraft has the short ailerons and outboard wing-tip skids that typified the later Scouts D.* (Photo: Aeromodeller)

of the barrels to concentrate the shot. Buckshot was fired and a kind of chainshot—about three or four lumps of lead the size of small peas connected by steel wire. The idea here was to rip the fabric wing-covering of your opponent's machine; once you made a hole it was hoped the wind would do the rest.

After the shotguns we made an experiment with a Martini Henry rifle lashed to the centre-section strut firing at an angle of about forty-five degrees from the line of flight of the aircraft, so as to fire outside the arc of the propeller . . .

Then came the Lewis machine-gun and tests were carried out on the Bristol Bullet fighter. The gun was mounted on top of the fuselage, firing through the arc of the propeller just before the blade flattened out.

Two or three holes could be made with impunity and the propeller bound up with sticky tape after landing. If there were more than three holes the propeller was scrapped."

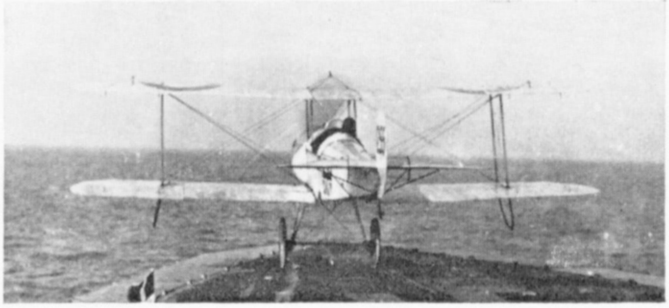
And yet successes could be won, even with home-made weapon installations. Captain L. G. Hawker, D.S.O., of No. 6 Squadron, R.F.C., designed a simple mounting for a Lewis gun on the squadron's Bristol Scout. The gun was carried on the port side of the fuselage and fired outwards and slightly downwards to clear the airscrew. Despite the enormous difficulties of aiming a gun so aligned, Hawker drove down three enemy two-seaters in the course of a single patrol on 25th July 1915 while he was flying No. *1611*. The third of his victims, an Albatros two-seater, fell in flames over Hooge. For this action Hawker was awarded the Victoria Cross: he was the first man to receive the decoration for an action in aerial combat

It seems likely that an overwing mounting came to be regarded as more or less standard for R.F.C. Bristols. Under the date 2nd March 1916 Maurice Baring noted * "No. 6 has no gun-mounting on the top plane of the Bristol." Later, under the date 17th May 1916, Baring recorded * "One Bristol is now ready, and will be sent with overhead top gun-mounting to No. 11 Squadron."

Another famous fighter pilot who flew a Bristol Scout, albeit briefly, was Albert Ball, who flew No. 13 Squadron's Scout in the spring of 1916. By that time British gun-synchronizing gears were becoming available, and the first British fighting aircraft to go to France equipped with a British mechanism of this kind (the Vickers-Challenger gear) was a Bristol Scout. It arrived in France on 25th March 1916. Inevitably there were teething troubles: on 5th May Ball was forced to return with a severely damaged airscrew when his Scout's gun gear malfunctioned.

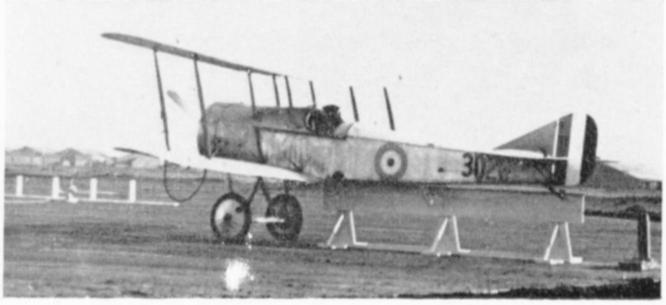
Frank Barnwell had joined the R.F.C. late in 1914, but in August 1915 he was released to return to the Bristol company on indefinite leave. On his return to Filton he revised the Bristol Scout design in detail. The modifications were intended to improve servicing and facilitate replacement of components in operational conditions, and to meet some of the R.F.C. and R.N.A.S. criticisms of the aircraft. The enlarged tailplane and elevators were standardized and the rudder area was also increased; in the interplane bracing Rafwires replaced the original stranded cables.

The modified design was named Bristol Scout D, the first production aircraft being supplied to the R.F.C. as *5554–5603*. Deliveries began in mid-February 1916, by which time the War Office had ordered 30 more Scouts (*7028–7057*) and the Admiralty



Flight Lt. H. F. Towler, flying No. 1255, *makes the first take-off from a carrier vessel in time of war, 3rd November 1915. In this historic photograph the slinging gear above the Scout's centre section can be seen.*

The modified Scout C No. 3026 *at the Isle of Grain, 14th February 1917, testing a form of Tail Guide Trestle on the dummy deck on which so much remarkable experimental work was done under the direction of Harry Busteed. In standard form No.* 3026 *had earlier served at R.N.A.S. Chingford.*



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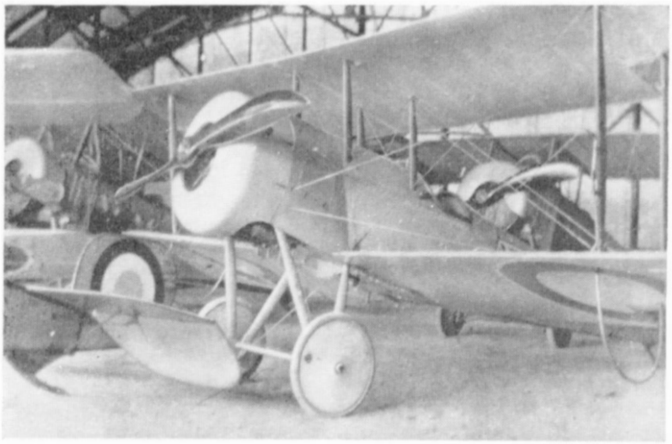
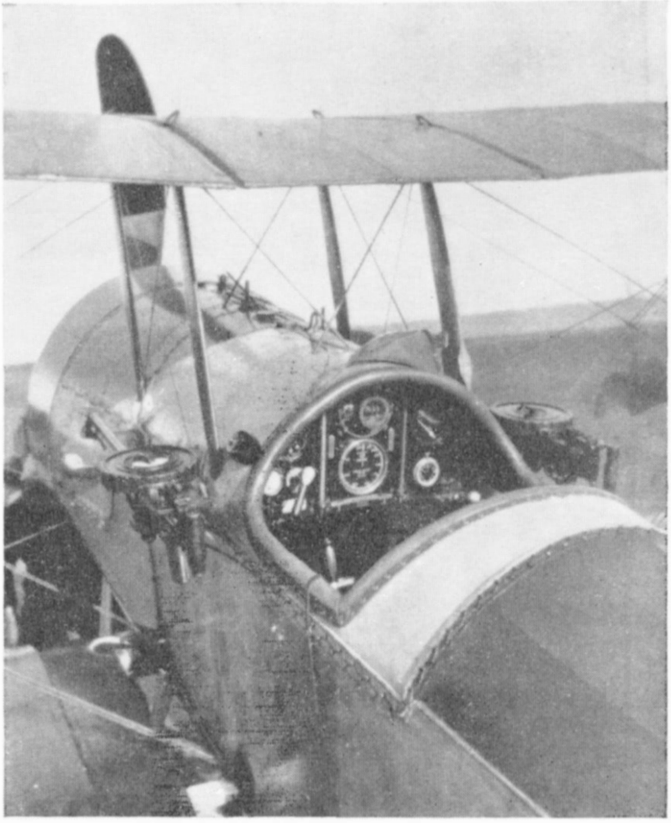
* Both quotations from *Flying Corps Headquarters 1914-1918.*



Scout C of No. 2 Wing R.N.A.S., Imbros, with small bombs fitted between the tops of the forward legs of the undercarriage V-struts. The national markings are the red ring with large white centre that was extensively used by the R.N.A.S. early in the war.



Cockpit and side-mounted Lewis guns of a Scout D of No. 2 Wing, R.N.A.S., Imbros. The taping of the airscrew in the line of fire of the guns can be seen in this photograph.
(Photo: John H. Blake)

had ordered fifty (*8951–9000*) with the 100 h.p. Gnome Monosoupape engine. The final batches, *A1742–A1791* for the R.F.C. and *N5290–N5419* for the R.N.A.S., were delivered between 22nd July and 16th December 1916.

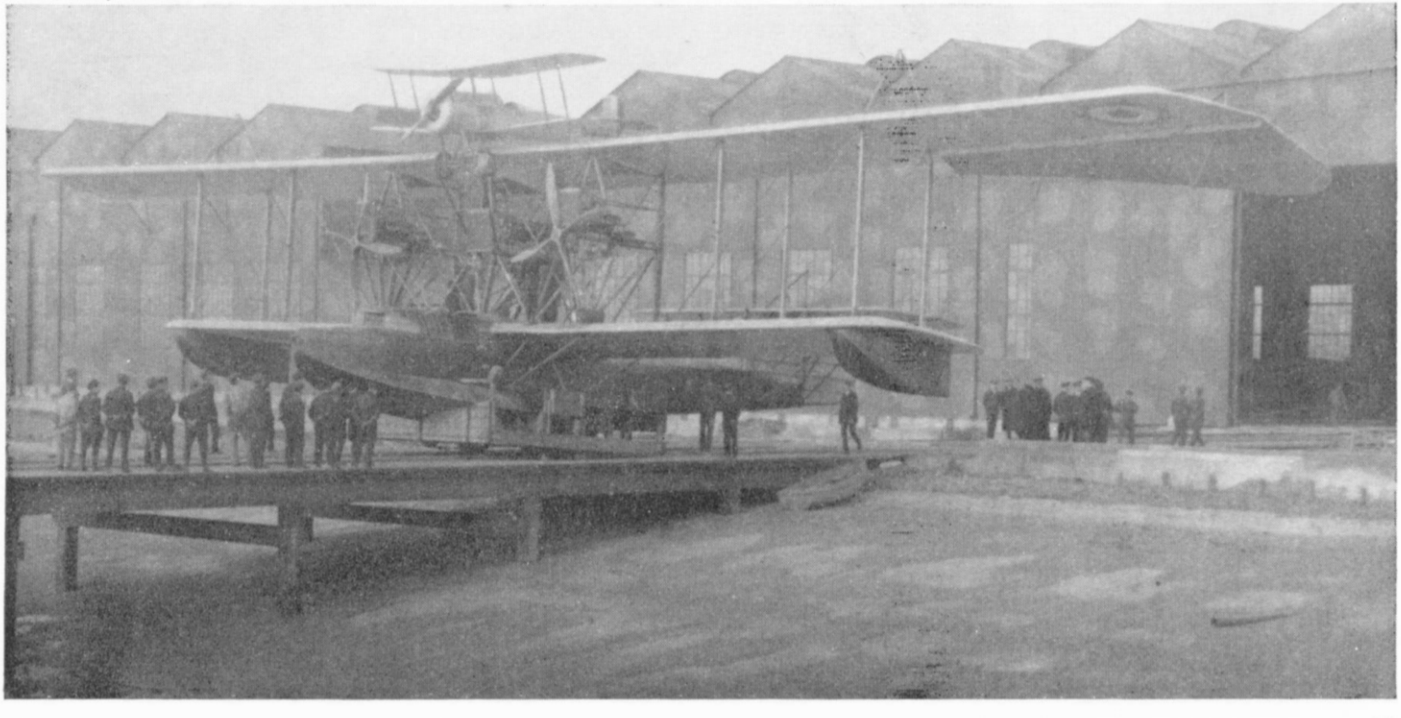
New wings with smaller ailerons were fitted to the later Scouts D. On these aircraft the inboard end of each aileron was in line with the interplane struts, and the underwing skids were further outboard. The late Scouts D had a rudder that was slightly smaller than that of the aircraft that had the original wings and long ailerons.

For the Monosoupape installation in the R.N.A.S. Scouts D a cowling of larger diameter with an enlarged frontal opening was provided. This cowling had a bulge on its starboard side to expedite the extraction of the engine exhaust. In all, sixty aircraft were delivered with the 100 h.p. engine: in addition to *8951–9000* the first ten Scouts of the batch *N5390–N5419* had the Monosoupape. The last twenty, *N5400–N5419*, had the 80 h.p. Gnome.

It seems that, on the Admiralty Scouts D, some attempt to standardize armament was made, and the aircraft as originally built had a V-shaped cut-out in the centre-section trailing edge to enable an over-wing Lewis gun to be fitted. It now seems remarkable that the R.N.A.S. made no general effort to fit synchronized Vickers guns to their Bristol Scouts, despite their use of the Scarff-Dibovsky gear since the spring of 1916.

The little Bristols saw service in most theatres of war, always in small numbers, always ineffectively or dangerously armed. In Palestine, R.F.C. Squadrons Nos. 14, 67 (Australian) and 111 each had a few; these Bristols were apparently used as escorts to the two-seaters also flown by the squadrons. They out-

The Scout C No. 3028 *on the upper wing of the prototype Porte Baby flying boat at Felixstowe before the airborne launching experiment, May 1916.*



A Scout D of No. 2 Wing, R.N.A.S., that came to grief near Balchick. This aircraft was one of the twenty that were transferred to the R.F.C. and should have been A3019 *had it remained with the R.F.C. However, the presentation of the serial number strongly suggests that the aircraft is still in its original factory finish and therefore never wore its temporary R.F.C. number.*
(Photo: John H. Blake)

lived the Scouts that served in France; the last known record of a Bristol Scout in Palestine is of the solitary example that was on the strength of the Fifth Wing as late as 27th October 1917.

Others in the Middle East were used for training purposes at Abu Qir and Heliopolis. When No. 30 Squadron, R.F.C., operating in Mesopotamia, had asked for some fighting aircraft to counter the new German single-seat fighters that had appeared there in April 1917, a number of Bristol Scouts were hastily transferred from Egypt as a stop-gap until Spads could be provided. On 22nd April 1917 one of these Bristols, flown by Lt. M. L. Maguire, shot down a Halberstadt near Istabulat.

Some Bristols were with No. 30 Squadron in June 1917, and later that year No. 63 Squadron at Samarra started its operational career with a mixed flight of Spads, Martinsydes and Bristol Scouts to protect its R.E.8s. The Scout was still in use with No. 63 Squadron in November 1917.

The type was also flown in Macedonia, where No. 47 Squadron, R.F.C., had a few Bristols on its strength.

In R.N.A.S. service the Bristol Scout was widely and variously used. At coastal stations in the United Kingdom the Bristols were flown as Home Defence aircraft, and many were armed with containers of Ranken Darts* for anti-airship work. These darts were at first carried in box-like magazines mounted externally on the lower longerons immediately behind the trailing edge of the lower wing, but on some later Scouts two cylindrical containers were fitted inside the fuselage under the pilot's seat.

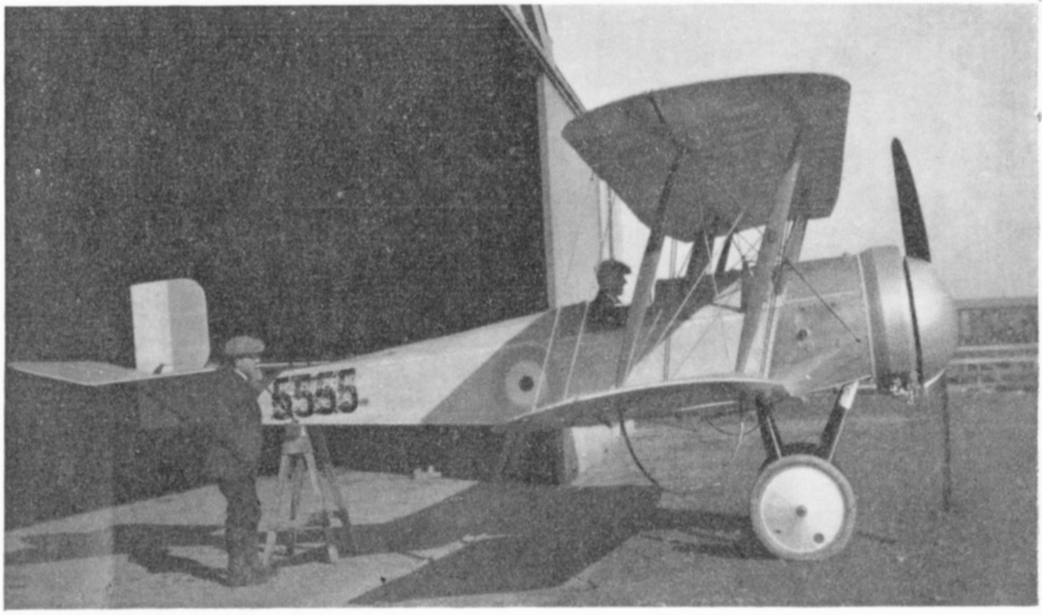
True operational deck flying from a carrier vessel was pioneered by the Bristol Scout. On 3rd November 1915 Flight Lt. H. F. Towler flew No. *1255* from the small flying-off deck that had been fitted to H.M.S. *Vindex*, the first small aircraft carrier to be so equipped. *Vindex* had a tiny hangar in which two dismantled Scouts could be carried. Flying off was not then a high-speed operation: the aircraft had to be brought out, assembled, and then lifted by crane to the flying deck.

Not until 2nd August 1916 did one of *Vindex*'s Bristols attack a Zeppelin, however. Flight Lt. C. T. Freeman's Scout was armed with Ranken Darts, and he succeeded in getting into position 500 ft. above the airship, the Zeppelin L.17. He emptied one magazine of darts, which missed the airship; in a second attack the Zeppelin avoided the half-magazine load that Freeman dropped and a machine-gun on top of the airship began to fire at him. On his final attack at least one Ranken Dart struck the airship but failed to ignite. Freeman set course for *Vindex* but vibration had caused a leak in his Scout's petrol tank and loss of fuel obliged him to ditch. The aircraft had air bags in the fuselage, and these kept it afloat long enough for Freeman to be rescued by a Belgian ship.

When Flight Lt. Towler flew *1255* from H.M.S. *Vindex* in November 1915 he made use of the Tail Guide Trestle. This device had been first evolved for use aboard H.M.S. *Campania* and was intended to hold an aircraft in flying position and thus shorten the take-off run. A slot ran the full length of the top horizontal member of the trestle on its port side; a ball attachment on the starboard side of the aircraft's tailskid engaged in the slot in the trestle.

Experiments with the Tail Guide Trestle continued at the Isle of Grain after Towler's convincing demonstration of its effectiveness. As late as February 1917 the Scout C No. *3026* was used at the Isle of Grain in tests of a slightly refined trestle. At that time the aircraft had a modified tail unit incorporating a fixed triangular fin and a plain rudder.

The R.N.A.S. displayed remarkable resourcefulness in their attempts to combat enemy airships and evolved many ingenious techniques and devices. One of the most ambitious schemes, matched perhaps only by the ill-fated airship-plane combination, was the air launching of a Bristol Scout C from the upper wing of the prototype Porte Baby flying boat.



Scout D No. 5555 *with 110 h.p. Clerget engine, enlarged cowling and spinner.*
(Photo: Bristol Aeroplane Co.)

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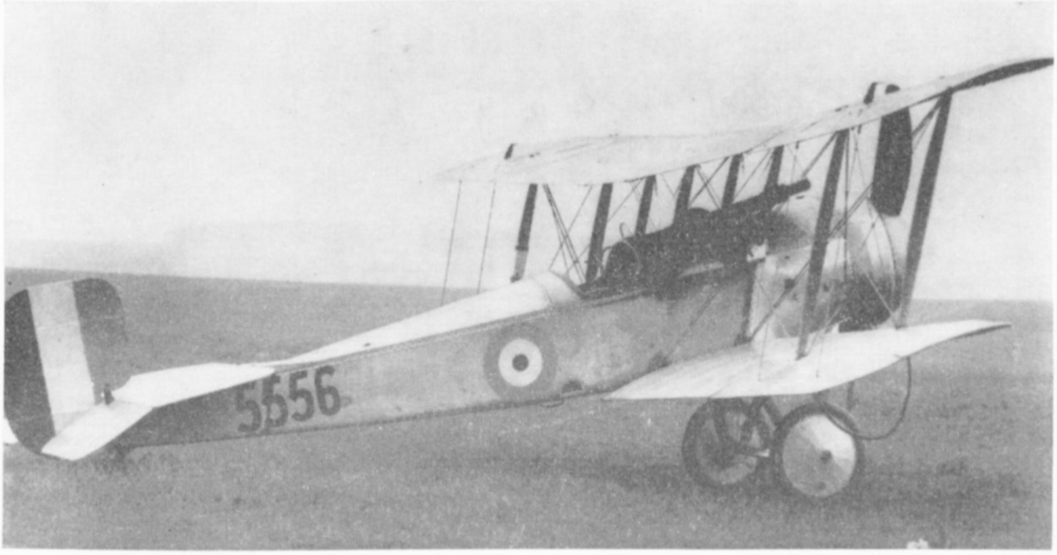
* *The Ranken Dart was a missile with a pointed body containing an incendiary composition; its tail consisted of four vanes that were designed to catch in an airship's envelope after the dart had penetrated it. This in turn caused a movement of the vane-carrying spindle that rubbed a match strip to ignite an incendiary charge. Although issued on a large scale the Ranken Dart was not an effective weapon. Early tests were made from a Bristol Scout flown by Lt. W. G. Moore, who gives an amusing account of the occasion in his book*, Early Bird, *pp. 13-14.*



No. 5556 *with basically similar installation but rather more refined engine cowling. Like No.* 5555, *this aircraft had the large rudder.*
(Photo: Ministry of Defence)

The big flying boat could stay airborne for several hours longer than the Bristol's maximum endurance and was expected to launch the Scout in the event of an enemy airship being sighted.

A test of this combination was made in May 1916. The flying boat was flown by its designer, Squadron Commander J. C. Porte, the Bristol Scout (No. *3028*) by Flight Lt. M. J. Day, and a successful separation was made at 1,000 ft. over Felixstowe. Despite the success the idea was not developed and no further airborne launchings were attempted. The reason for the abandonment of the idea remains obscure. Possibly the weight of the Scout so reduced the fuel load that the Baby could carry that the flying boat's range ceased to be worth while. Alternatively, few Porte Baby aircraft were built, and it may have been considered that shipboard launching offered the coverage of a greater sea area.

Bristol Scouts of the R.N.A.S. participated in the Dardanelles campaign. When No. 2 Wing arrived at the Isle of Imbros late in August 1915 its equipment included four Bristol Scouts C with 80 h.p. Gnome engines. Six more Bristols, armed with Lewis guns, arrived towards the end of 1915 and helped provide a measure of air protection for the evacuation of the British land forces.

No. 2 Wing had original ideas on the armament of their Bristol Scouts. At least one was fitted with a rack for small bombs between the forward legs of the undercarriage struts on the underside of the nose; most, if not all, were armed with at least one Lewis gun and several aircraft had two. In all cases at least one Lewis was mounted on an upper longeron firing straight ahead; the second gun was either similarly fixed on the opposite side or carried above the centre section. No synchronizing gear of any kind was fitted: the fixed guns were fired when need arose and, as described in the extract from *Early Bird* quoted on page 7, airscrews that were not too badly damaged were simply plugged, taped, and returned to service.

In addition to the Bristols of No. 2 Wing in the Aegean the R.N.A.S. provided two Scouts as part of its contribution to the composite Franco-British unit, known as "A" Flight, that operated from Thasos from May until July 1916.

The recurrent mystery of the Bristol Scout is why it did not remain in production once gun-synchronizing mechanisms became available. Its performance was good, its handling qualities impeccable, and on all important counts it bore comparison with the Sopwith Pup (*Profile* No. 13).

The Bristol's performance was enhanced by the installation of the 110 h.p. Clerget in the first three Scouts D, *5554–5556*, in the early spring of 1916. The Clerget was 1020 mm. in diameter, whereas the 80 h.p. Gnome measured 930 mm. and the 80 h.p. Le Rhône 945 mm. The diameter of the engine cowling therefore had to be increased and, at least in the case of *5555*, this produced an abrupt "step" in the nose contours. On *5556*, possibly at a later stage, the large-diameter cowling was more carefully faired into the forward fuselage. For all three Clerget-powered Scouts, Barnwell designed large spinners that covered the frontal aperture of the cowling almost completely; that of *5555* provided the basis for the design of the engine installation of the Bristol M.1A monoplane.

A spinner of different design was also tested on *5556*. This was more conical but distorted seriously when running and had to be abandoned.

Although the 110 h.p. Clerget gave the Scout D more speed and an improved rate of climb it impaired the aircraft's flying qualities. The C.F.S. report commented "Machine tiring to fly as it is very tail heavy with engine on. With engine off machine glides at 65 m.p.h. hands off. By pulling stick in slowly machine cannot be made to stall but parachutes at 55 m.p.h."

Other Scouts D that had spinners were *8951*, which had a Monosoupape engine, and an R.F.C. aircraft that was fitted with the 110 h.p. Le Rhône installation, complete with spinner, from one of the contemporary Morane-Saulnier aircraft. The origins and inspirations of both installations are unknown. That on *8951* was commendably clean; the Le Rhône version belonged to the Flying Instructors' School at London Colney and was flown a good deal by Lieutenant Frank T. Courtney who, writing about it to the author, said:

> "Your remark that my Bristol Scout D had a 110 Le Rhône installation which 'must have been home-made' was a sort of understatement. The bulge in the cowling knocked off any extra speed which the increased power might have provided, but the climb was wonderful."

Frank Courtney's Scout was one of those that were used for what were euphemistically termed training purposes. Certainly after their withdrawal from operational service the surviving Scouts were allocated to training units of the R.F.C. and R.N.A.S. The latter Service sent three Scouts D, *N5411–N5413*, to its Vendôme School in France, the training unit that was set up there in November 1916 in an attempt to avoid the interference with flying training that was inevitable in the winter of the United Kingdom.

But at the training units the Scouts' delightful flying qualities made them the sought-after and highly prized personal aircraft of senior officers, and in this respect the Bristol shared the popularity of the Sopwith Pup. Writing in his book *The Clouds Remember* Oliver Stewart said:

> " . . . a pilot who was able to secure one of these aeroplanes was looked upon with envy by all other pilots, and he would take very good care that his 'training' machine was never used for training and that no pilot but himself ever went near it."

Few Scouts went to other nations' air services for evaluation. No. *1247* went to the French government, and it is believed that consideration was given to the possibility of manufacturing the type in France. No. *3013* was sent to the Greek government, but its service and fate are unknown.

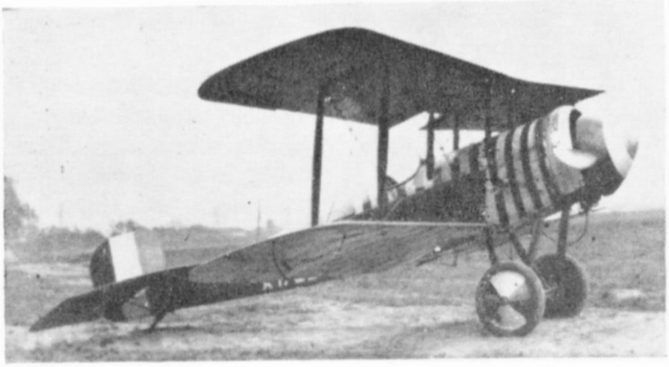
The Scout D *8976* went to Australia, where it was flown at the Australian Central Flying School, Point Cook. An example also went to the U.S.A., where it was flown at McCook Field with the project No. P-32. Its British identity was *B763*, one of several Bristol Scouts that were rebuilt by No. 1 (Southern) Aeroplane Repair Depot, Farnborough. American reports indicate that *B763* was transferred to Wilbur Wright Field on 30th April 1921, but its ultimate fate is unknown.

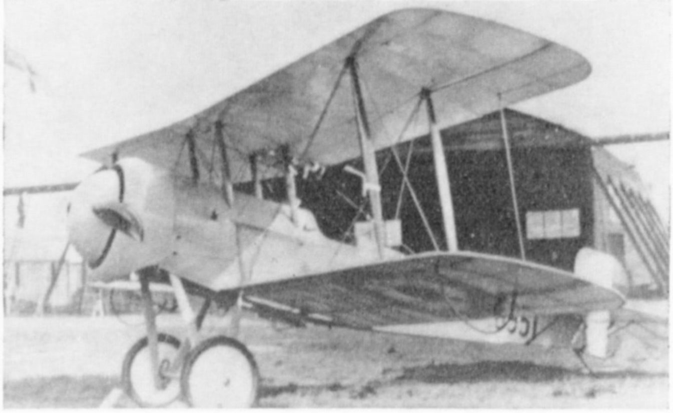
Despite its universal popularity as a flying machine the Bristol Scout did not survive the war as a sporting aircraft. Possibly old age and lack of spares had much to do with this, for in 1919 the Bristol company declined to build a single Scout D for a Spanish pilot, Juan Pombo, who wanted one, and were also unable to accept any of those still in store as being in good enough condition to be saleable.

Thus only G-EAGR represented this great little aeroplane on the British civil register. Originally the Scout D *5570*, the aircraft was flown at Hendon for a time in 1919 still wearing its service serial number. It was owned by Major J. A. McKelvie, who kept it until 1926, when he sold it to Squadron Leader Champion de Crespigny: a year later it was bought by Flight Lieutenant A. M. Wray. Denied a renewal of its certificate of airworthiness because it did not have a fireproof bulkhead of an approved pattern, it was finally scrapped in 1930.

The Bristol Scout was perhaps the classic fighter *manqué* of its war. Its origin was innocent and unwarlike, yet its potential as a fighter was considerable. Perhaps its development was not pursued because its great descendant, the Bristol Fighter, demanded at a critical time the full attention of Frank Barnwell and all the resources of the British and Colonial Aeroplane Co.

The Scout D of S.E. Area Flying Instructors' School with 110 h.p. Le Rhône engine and spinner from a Morane-Saulnier aircraft, flown by Lt. Frank T. Courtney.





Scout D No. 8951 *with spinner on 100 h.p. Monosoupape engine.*

A postscript to the Bristol Scout history was written in 1923, when Frank Barnwell drew up the list of Bristol type numbers that continued until the Bristol company lost its separate identity. Barnwell's numbered list started with the aircraft that he himself

SPECIFICATION

Power: Scout A—80 h.p. Gnome, 80 h.p. Le Rhône.
Scout B—80 h.p. Gnome.
Scout C—80 h.p. Gnome, 80 h.p. Le Rhône, 80 h.p. Clerget.
Scout D—80 h.p. Gnome, 80 h.p. Le Rhône, 80 h.p. Clerget, 100 h.p. Gnome Monosoupape, 110 h.p. Clerget 9Z, 110 h.p. Le Rhône 9J.

Dimensions: Span, originally 22 ft. on Scout A, later 24 ft. 7 in. on all versions; length (Scout A) 19 ft. 9 in., (Scouts B, C and D) 20 ft. 8 in.; height (Scouts B, C and D) 8 ft. 6 in.; chord, originally 4 ft. on Scout A, later 4 ft. 6 in. on all versions; gap 4 ft. 3 in.; stagger (Scout A) 1 ft. 4 in., (Scout C) 1 ft. 4½ in., (Scout D) 1 ft. 4½ in. with 80 h.p. engines, 1 ft. 7·3 in. with Monosoupape and 110 h.p. Clerget; dihedral originally 1 deg. 45 min., increased to 3 deg. on all Scouts built after 10th September 1915; incidence (Scout C) 2 deg., (Scout D) 2 deg. 30 min.; span of tail, originally 8 ft., later 10 ft. on Scouts C and D from *3013* onwards; wheel track (Scout A) 3 ft. 3 in., (Scouts B, C and D) 4 ft. 4 in.; tyres 700 ×75 mm.; airscrew diameter (80 h.p. Le Rhône, Type B & C. P3001, and 80 h.p. Clerget, Type B & C P2408) 8 ft. 2½ in., (110 h.p. Clerget, Type B & C P3020) 8 ft. 6¾ in.

Areas: Wings (Scout A, original) 161·5 sq. ft., later 198 sq. ft. on all versions. Ailerons (Scout D) each 5·8 sq. ft., total 23·2 sq. ft. Tailplane (Scout A) 15 sq. ft., (final Scout C and D) 23 sq. ft. Elevators (Scout A) 13 sq. ft., (final Scout C and D) 15 sq. ft. Rudder (Scout A) 5 sq. ft., (Scout C) 5·13 sq. ft., (Scout D) 7 sq. ft., (Scout D, large type) 8·15 sq. ft.

Armament: As indicated in the narrative, this varied enormously. The Scout B of No. 3 Squadron, R.F.C., had two rifles, one fixed on each side of the fuselage, firing obliquely outwards; that of No. 5 Squadron had a Lee-Enfield rifle on the starboard side, a Mauser pistol and five rifle grenades. Scouts C had various individualistic arrangements of pistols, duck-guns, carbines, rifles or machine guns. Several R.F.C. Scouts C had an obliquely mounted 0·303 in. Lewis gun on one side of the fuselage or a Lewis above the centre section. The R.N.A.S. frequently fitted a fixed forward-firing Lewis gun, without synchronizing mechanism, either centrally or on one of the upper longerons; occasionally a second Lewis was fitted on the opposite side or above the centre section. R.N.A.S. anti-airship Scouts had two 24-round containers of Ranken Darts; some of the Bristols of No. 2 Wing, R.N.A.S., were fitted with racks under the nose for up to four light bombs. A few Scouts had, in 1916, a single 0·303 in. Vickers machine gun with Vickers-Challenger or Scarff-Dibovsky interrupter gear.

The sole civil-registered Bristol Scout, originally the Scout D No. 5570.

had designed; thus, retrospectively, the following type numbers were applied to versions of the Bristol Scout:

Type 1—Scout C (80 h.p. Gnome or Le Rhône)
Type 2—Scout D (80 h.p. Gnome)
Type 3—Scout D (80 h.p. Le Rhône)
Type 4—Scout D (100 h.p. Gnome Monosoupape)
Type 5—Scout D (110 h.p. Clerget 9Z)

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PRODUCTION

A total of 374 Bristol Scouts were made by the British and Colonial Aeroplane Co., Ltd., Filton and Brislington, Bristol. That total comprised one Scout A, two Scouts B, 161 Scouts C and 210 Scouts D. Serial numbers were as follows:
Scout B: *633* and *648*. Scout C: *1243–1266*, *1602–1613*, *3013–3062*, *4662–4699*, *5291–5327*. Scout D: *5554–5603*, *7028–7057*, *8951–9000*, *A1742–A1791*, *N5390–N5419*.

The Admiralty asked the Bristol company to build a further batch of Scouts D, for which the serial numbers *N6610–N6649* were allotted, but the firm declined and the serials were re-allocated.

The Scouts D *8981–8985* and *8986–9000* were allotted the serials *A2376–A2380* and *A3006–A3020* on their transfer from the R.N.A.S. to the R.F.C., but the aircraft were returned to the R.N.A.S. and it is doubtful whether they ever wore their revised numbers.

Rebuilds by No. 1 (Southern) Aeroplane Repair Depot, Farnborough: *B746*, *B763*, *B793*.

SERVICE USE

France.—R.F.C. Squadrons Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 18, 21, 24 and 25; R.N.A.S. Flying School, Vendôme. *Palestine*.—R.F.C. Squadrons Nos. 14, 67 (Australian) and 111. *Mesopotamia*.—R.F.C. Squadrons Nos. 30 and 63. *Macedonia*.—No. 47 Squadron, R.F.C. *Aegean*.—No. 2 Wing, R.N.A.S., Isle of Imbros; "A" Flight, R.N.A.S., Isle of Thasos. *United Kingdom*.—No. 39 (Home Defence) Squadron, R.F.C.; R.N.A.S. Defence Flights at Chingford, Cranwell, Dover, Eastchurch, East Fortune, Isle of Grain, Great Yarmouth, Port Victoria, Redcar and Walmer. *Australia*.—Australian Flying Corps Central Flying School, Point Cook, Werribee, Victoria.
Seaplane carriers: Two Bristol Scouts on H.M.S. *Vindex*.

Examples of Bristol Scouts used by R.F.C. and R.N.A.S. units

No. 1 Sqn., R.F.C.—*1602*.
No. 2 Sqn., R.F.C.—*4667*.
No. 4 Sqn., R.F.C.—*648*.
No. 5 Sqn., R.F.C.—*1603*.
No. 6 Sqn., R.F.C.—*1609*, *1611* (later to No. 12 Sqn.).
No. 7 Sqn., R.F.C.—*1606* (later to No. 12), *4669* (later to No. 12), *4674*.
No. 8 Sqn., R.F.C.—*1608*, *1610*, *1613*, *4666*.
No. 9 Sqn., R.F.C.—*4677*, *5291*, *5297*, *5306*.
No. 12 Sqn., R.F.C.—*1606* (ex No. 7 Sqn.), *1611* (ex No. 6), *4662*, *4669* (ex No. 7), *4677*, *4698*, *5301*.
No. 14 Sqn., R.F.C.—*4688*, *4689*.
No. 16 Sqn., R.F.C.—*4670*.
No. 39 Sqn., R.F.C.—*5581*, *5587*, *5589*, *5591*.

R.N.A.S. Units.—Chingford: *3026* (later at Isle of Grain), *8988*. Cranwell: *1243* (ex Isle of Grain), *1256* (also used at Gt. Yarmouth), *1266* (also Port Victoria), *3016*, *3041*, *3046*, *N5403*, *N5404*, *N5407*, *N5414*. Dover: *1254* (ex Eastchurch), *3035*, *3039*, *3043*, *3045*, *8966*. Eastchurch: *1245*, *1246*, *1249*, *1254* (later Dover), *1255* (later H.M.S. *Vindex*), *N5390*. East Fortune: *N5394*. Isle of Grain: *1243* (later Cranwell), *3026* (ex Chingford). Great Yarmouth: *1252*, *1256* (also at Cranwell), *1257*. Port Victoria: *1266* (also Cranwell). Redcar: *1250*. Walmer: *3055*, *8958*. No. 2 Wing, Imbros and Mudros: *1262*, *1264*, *8999*, *N5393*, *N5396*. R.N.A.S. Flying School, Vendôme: *N5411–N5413*. H.M.S. *Vindex*: *1255* (ex Eastchurch), *3028*, *8953*, *8954*, *8955*, *8979*, *8980*.

Inter-Service transfers.—From R.N.A.S. to R.F.C.: *8981–9000* (later returned to R.N.A.S.). From R.F.C. to R.N.A.S.: *5564*, *5565*, *A1769–A1772*, *A1790–A1791*.

WEIGHTS AND PERFORMANCE

Aircraft ...	Scout A	Scout D		
Engine ...	80 h.p. Gnome	80 h.p. Le Rhône	80 h.p. Clerget	110 h.p. Clerget
Weights (lb.)				
Empty ...	617	766	750	941
Military load	—	80	Nil	80
Pilot ...	—	180	170	180
Fuel and oil	—	169	169	241
Loaded ...	957	1,195	1,089	1,442
Max speed (m.p.h.)				
at ground level ...	95	92·7	93·8	107·3
at 5,000 ft. ...	—	90·5	—	108
at 10,000 ft.	—	86·5	—	—
Climb to ...	m. s.	m. s.	m. s.	m. s.
1,000 ft. ...	1 15	0 55	1 38	1 0
5,000 ft. ...	— —	7 0	8 5	6 30
10,000 ft. ...	— —	21 20	27 30	18 15
15,000 ft. ...	— —	50 0	— —	— —
Service ceiling (ft.) ...	—	15,500	11,000	14,000
Endurance (hours) ...	3	2½	2	2½

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